Silage harvest critical control points

1. Harvest the corn plant between 32% and 36% dry matter to ensure good digestibility and facilitate packing and quality fermentation. Silage harvested under 32% dry matter loses too many nutrients through liquid shrink. Wet corn silage also dilutes the acid and as a result, it takes longer for pH to drop. This extends the aerobic fermentation phase, allowing bad organisms to keep growing longer. The bottom line is too wet a silage hurts the fermentation.

   Silage piles over 36% dry matter are hard to pack, so it’s difficult to extract all the air. Plus, these silages are typically over mature and have lower digestibility: the older the plant, the more lignin is present.

2. Harvest the plant with a target milk line of 75% and a minimum milk line of 50%. This is an indicator of starch deposition into the kernel. As sugars are converted into starch and deposited in the kernel, the milk line will increase. The more milk line we have, the less corn grain we will have to feed to reach adequate total levels in the diet.

   Monitor the milk line closely—as the milk line increases, the plant gets drier.

3. Attain neutral detergent fiber (NDF) digestibility at 30 hours of >45%. Fiber digestibility is possibly the biggest influence in how much corn silage you can feed and how cows will milk on different quality corn silages. Lower digestibility numbers decrease feed intakes and impair cow performance. Here are tips to improve silage digestibility:
   > Choose corn varieties that have a high fiber digestibility.
   > Plant corn as early as possible to minimize plant growth during hot weather.
   > If irrigating, irrigate more often with less volume. Do everything you can to get water to the entire field as quickly as possible.

4. Achieve optimal corn silage processing scores (CSPS) of 70% or greater. Starch digestibility in corn silage might vary between 60% and 85%. Processing the kernels increases how much of the total starch is available to the cow. Processing score, together with total starch, will define how much rolled corn you will have to supplement. Optimal processing makes more of the total plant starch available to the cow.

5. Reach anaerobic fermentation and drop the pH of the pile as quickly as possible. The pH should drop below 4 to prevent pathogen growth. Lactic acid is what makes silage pH drop rapidly, minimizing yeast, mold and undesirable bacteria growth during initial fermentation.

   The goal is to reach a lactic to acetic acid ratio of 3:1. Lactic acid drops the pH of the pile and acetic acid prevents the pile from heating and halts bad yeast and mold growth.

6. Keep air from getting into the silage pile until it is opened to feed. After we put up the pile and cover it and the little bit of oxygen that we couldn’t extract is used up, we halt aerobic fermentation. We do not want oxygen to get back into the pile and restart aerobic fermentation, which is called secondary fermentation. This secondary fermentation is a major cause of shrink and money down the drain.

   Together with secondary fermentation comes a rise in pH, heating up the silage and the growth of bad bacteria. Pile surface temperature, as measured with an infrared thermometer, should be equal or below ambient temperature.

Source: Enrique Schcolnik, DVM